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EXAMINER	
CHANG, JON CARLTON	
ART UNIT	**PAPER NUMBER**
2623	3

DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/732,701	KASUTANI, EIJI	
	Examiner	Art Unit	
	Jon Chang	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-27 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-4,9,10,12,16,17,21,22,26 and 27 is/are rejected.

7)☒ Claim(s) 5-8,11,13-15,18-20 and 23-25 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 11 December 2000 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3-4, 12, 10, 22 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by the article, "Texture Image Retrieval by Universal Classification for Wavelet Transform Coefficients" by Yue et al. (hereinafter "Yue").

Regarding claim1, Yue discloses an image retrieval device (Yue explicitly discloses a method, while the device with associated means is considered inherent for implementing the method) for retrieving an image being similar to an inquired image from images stored in an image database comprising:

a first coefficient transforming means for transforming a first group of image feature descriptors extracted from image data accumulated in said image database and then generating a second group of image feature descriptors to be used for calculating similarity (section 3, first paragraph; Fig.1; the first group of image feature descriptors are the wavelet transform coefficients, and the transforming is the quantizing of those coefficients; the database is described in the abstract and section 2);

a second coefficient transforming means for transforming a first group of image feature descriptors extracted from image data of said inquired image and then generating a second group of image feature descriptors to be used for calculating similarity (section 3, first paragraph; Fig.1; the first group of image feature descriptors are the wavelet transform coefficients, and the transforming is the quantizing of those coefficients; the inquired image is the other image being analyzed); and

a similarity calculating means for calculating similarity by comparing said second group of image feature descriptors for each piece of image data generated by said first coefficient transforming means with said second group of image feature descriptors transformed by said second coefficient transforming means (section 3).

Regarding claim 3, Yue discloses the image retrieval device according to claim 1, wherein said first coefficient transforming means and said second coefficient transforming means perform transform of image feature descriptors in a manner that visual similarity between images to be compared is approximated by a distance between an image expressed by said second group of image feature descriptors of image data contained in said image database and an image expressed by said second group of image feature descriptors of image data of said inquired image (note distance measure/statistic in section 3 and Fig.1).

As to claim 4, Yue discloses the image retrieval device according to claim 1, wherein said first coefficient transforming means and said second coefficient transforming means use, as said image feature descriptor, a transform coefficient

obtained by performing specified transforming processing of coefficient on image data (section 3, first paragraph).

Regarding claim 12, Yue discloses the image retrieval device according to claim 1, further comprising an image size resizing means for resizing image accumulated in said image database and/or inquired image in size, and an image feature descriptor producing means for performing an orthogonal transform on an image obtained by said image size resizing means and producing an orthogonal transform coefficient and using said orthogonal transform coefficient as a first group of image feature descriptors section 4, first paragraph, note that the sizes of the images are reduced by cutting; section 3, first paragraph).

Regarding claims 10 and 22, remarks analogous to those provided above for claims 1 and 12 are applicable.

3. Claims 1-4, 10, 12, 16, 22 and 26-27 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,345,275 to Lee.

As to claim 1, Lee discloses an image retrieval device for retrieving an image being similar to an inquired image from images stored in an image database comprising:

a first coefficient transforming means for transforming a first group of image feature descriptors extracted from image data accumulated in said image database and then generating a second group of image feature descriptors to be used for calculating similarity (column 1, lines 61-65; column 2, lines 10-12; column 2, lines 19-20. The

patent is only explicit with regard to transforming for the feature descriptors of the inquired image, while being silent with regard to transforming the feature descriptors for images in the database. However, the patent does mention that profiles of images in the database are used, column 2, lines 19-20, and explains how profiles are created for the inquired image via the transforming, column 2, lines 15-18. Presumably, the profiles for the image in the database are created in the same way, and therefore the description of the transforming means is applicable to images in the database.);

a second coefficient transforming means for transforming a first group of image feature descriptors extracted from image data of said inquired image and then generating a second group of image feature descriptors to be used for calculating similarity (column 1, lines 61-65; column 2, lines 10-12); and

a similarity calculating means for calculating similarity by comparing said second group of image feature descriptors for each piece of image data generated by said first coefficient transforming means with said second group of image feature descriptors transformed by said second coefficient transforming means (column 2, lines 53-54).

Regarding claim 2, Lee discloses the image retrieval device according to claim 1, further comprising an image feature descriptor storing means and wherein said similarity calculating means compares said second group of image feature descriptors of image data of said inquired image received from said second coefficient transforming means with said second group of image feature descriptors of image data contained in said image database read from said image feature descriptor storing means (column 2, lines 22-24).

As to claim 3, Lee discloses the image retrieval device according to claim 1, wherein said first coefficient transforming means and said second coefficient transforming means perform transform of image feature descriptors in a manner that visual similarity between images to be compared is approximated by a distance between an image expressed by said second group of image feature descriptors of image data contained in said image database and an image expressed by said second group of image feature descriptors of image data of said inquired image (column 2, lines 46 and 52-53; the similarity is essentially a distance, note the language, "similarity is within a reference value...").

With regard to claim 4, Lee discloses the image retrieval device according to claim 1, wherein said first coefficient transforming means and said second coefficient transforming means use, as said image feature descriptor, a transform coefficient obtained by performing specified transforming processing of coefficient on image data (column 1, line 63; column 2, lines 37-38).

Regarding claim 12, Lee discloses the image retrieval device according to claim 1, further comprising an image size resizing means for resizing image accumulated in said image database and/or inquired image in size, and an image feature descriptor producing means for performing an orthogonal transform on an image obtained by said image size resizing means and producing an orthogonal transform coefficient and using said orthogonal transform coefficient as a first group of image feature descriptors (column 2, lines 8-10; column 2, lines 35-39).

As to claim 16, Lee discloses the image retrieval device according to Claim 12, wherein said image feature descriptor producing means performs on an image obtained by said a discrete cosine transform (DCT) image size transforming means and extracts an obtained DCT coefficient and uses said DCT coefficient as a first group of image feature descriptors (column 2, lines 37-39).

Regarding claims 10, 22 and 26, see the remarks provided above for claims 1, 12 and 16.

Regarding claim 27, the remarks provided above for claims 1 and 10 are applicable. The storage medium storing a similar-image retrieval program is considered inherent since Lee's system is implemented in a computer (note title).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2, 9, 17 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yue.

As to claim 2, Yue discloses that the similarity calculating means compares said second group of image feature descriptors of image data of said inquired image received from said second coefficient transforming means with said second group of

image feature descriptors of image data contained in said image database (abstract; section 1; section 3, first paragraph). Yue does not disclose a feature descriptor storing means. However, the Examiner takes Official Notice that means for storing feature descriptors is well known. It would have been obvious to one of ordinary skill in the art to utilize a feature descriptor storing means in Yue's device because this would allow holding of the values for subsequent computation.

Claim 9 is similar to claim 1, but requires only a single coefficient transforming means. See the remarks provided above for claim 1 regarding common elements. Yue does not disclose a single coefficient transforming means, disclosing instead two separate coefficient transforming means (see Fig.1). Clearly, either one is capable of transforming feature descriptors. It would have been obvious to one of ordinary skill in the art to utilize only one of the coefficient transforming means to perform the transforming because this would reduce system size and cost.

Regarding claim 17, see the remarks provided above for claim 12.

Claim 27 is drawn to a storage medium storing a similar-image retrieval program, which corresponds to claims 1 and 10. The remarks provided above for claim 1 are applicable. Yue does not disclose a storage medium storing a program. The Examiner takes Official Notice that it is old and well known to use a computer to perform image retrieval. It would have been obvious to one of ordinary skill in the art to implement Yue's method on a computer because of the flexibility offered by computers, as well as their widespread availability. In implementing Yue's method with a computer, the storage medium storing a similar-image retrieval program would be inherent.

6. Claim 9, 17 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee.

Claim 9 is similar to claim 1, but requires only a single coefficient transforming means. See the remarks provided above for claim 1 regarding common elements. Lee discloses a single coefficient transforming means (e.g., Fig.1, element 106), but does not disclose that that coefficient transforming means transforms the feature vectors for the images in the database. However, the patent does mention that profiles of images in the database are used, column 2, lines 19-20, and explains how profiles are created for the inquired image via the transforming, column 2, lines 15-18. Presumably, the profiles for the image in the database are created in the same way. It would have been obvious to one of ordinary skill in the art to utilize the coefficient transforming means to perform the transforming of the coefficients of the images in the database, because this would keep system size and cost down.

Regarding claims 17 and 21, the remarks provided above for claims 12 and 16 are applicable.

Allowable Subject Matter

7. Claims 5-8, 11, 13-15, 18-20 and 23-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

References Cited

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,192,150 to Leow et al. discloses a texture matching apparatus for image retrieval which includes a texture feature extractor and a feature transformer.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jon Chang whose telephone number is (703)305-8439. The examiner can normally be reached on M-F 8:00 a.m.-6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703)308-6604. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

Jon Chang
Primary Examiner
Art Unit 2623

Jon Chang
September 30, 2003